



Standard #: MAFS.912.S-CP.1.2

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Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent. ★

Grade: 912	
Cluster: Understand independence and conditional probability and use them to interpret data. (Algebra 2 - Additional Cluster) - Clusters should not be sorted from Major to Supporting and then taught in that order. To do so would strip the coherence of the mathematical ideas and miss the opportunity to enhance the major work of the grade with the supporting clusters.	Date Adopted or Revised: 02/14
Content Complexity Rating: Level 1: Recall - More Information	Date of Last Rating: 02/14
Status: State Board Approved	

Related Courses

Course Number	Course Title
1200330:	Algebra 2 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1200340:	Algebra 2 Honors (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1210300:	Probability & Statistics with Applications Honors (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1200335:	Algebra 2 for Credit Recovery (Specifically in versions: 2014 - 2015, 2015 - 2019 (course terminated))

Related Access Points

Access Point

Access Points Number	Access Points Title
MAFS.912.S-CP.1.AP.2a:	Describe the characteristics that make events independent.
MAFS.912.S-CP.1.AP.2b:	Calculate the probability of events A and B occurring together. $P(A \text{ and } B) = P(A) \times P(B)$

Related Resources

Problem-Solving Task

Name	Description
Cards and Independence:	This problem solving task lets students explore the concept of independence of events.
Rain and Lightning:	This problem solving task challenges students to determine if two weather events are independent, and use that conclusion to find the probability of having similar weather events under certain conditions.
Return to Fred's Fun Factory (with 50 cents):	The task is intended to address sample space, independence, probability distributions and permutations/combinations.
The Titanic 2:	This task lets students explore the concepts of probability as a fraction of outcomes and using two-way tables of data.

Teaching Idea

Name	Description
Conditional Probability and Probability of Simultaneous Events:	This lesson is designed to further students' practice with probability as well as introduce them to conditional probability and probabilities of simultaneous independent events. The lesson provides links to discussions and activities related to conditional and simultaneous probabilities as well as suggested ways to integrate them into the lesson. Finally, this lesson provides links to follow-up lessons designed for use in succession with this one.

Virtual Manipulative

Name	Description
	This online manipulative allows the student to simulate placing marbles into a bag and finding the probability of pulling out certain combinations of marbles. This allows exploration of probabilities of multiple events as well as probability with

[Interactive Marbles:](#)

and without replacement. The tabs above the applet provide access to supplemental materials, including background information about the topics covered, a description of how to use the application, and exploration questions for use with the Java applet.

[Spinner:](#)

In this activity, students adjust how many sections there are on a fair spinner then run simulated trials on that spinner as a way to develop concepts of probability. A table next to the spinner displays the theoretical probability for each color section of the spinner and records the experimental probability from the spinning trials. This activity allows students to explore the topics of experimental and theoretical probability by seeing them displayed side by side for the spinner they have created. This activity includes supplemental materials, including background information about the topics covered, a description of how to use the application, and exploration questions for use with the java applet.

Lesson Plan

Name	Description
Medical Testing:	This lesson unit is intended to help you assess how well students are able to: <ul style="list-style-type: none"> • make sense of a real life situation and decide what math to apply to the problem • understand and calculate the conditional probability of an event A, given an event B, and interpret the answer in terms of a model • represent events as a subset of a sample space using tables, tree diagrams, and Venn diagrams • interpret the results and communicate their reasoning clearly
Modeling Conditional Probabilities 2:	This lesson unit is intended to help you assess how well students understand conditional probability, and, in particular, to help you identify and assist students who have the following difficulties representing events as a subset of a sample space using tables and tree diagrams and understanding when conditional probabilities are equal for particular and general situations.
STEM Genetics Board Game:	This is a STEM challenge to assist in teaching the probability of traits being passed down from parents to offspring by creating and playing a board game.

Worksheet

Name	Description
Replacement and Probability:	This lesson is designed to develop students' understanding of sampling with and without replacement and its effects on the probability of drawing a desired object. The lesson provides links to discussions and activities related to replacement and probability as well as suggested ways to work them into the lesson. Finally, the lesson provides links to follow-up lessons that are designed to be used in succession with the current one.

Assessment

Name	Description
Sample 1 - High School Algebra 2 State Interim Assessment:	This is a State Interim Assessment for 9th-12th grades.
Sample 2 - High School Algebra 2 State Interim Assessment:	This is a State Interim Assessment for 9th-12th grades.
Sample 3 - High School Algebra 2 State Interim Assessment:	This is a State Interim Assessment for 9th-12th grades.

Student Resources

Name	Description
Cards and Independence:	This problem solving task lets students explore the concept of independence of events.
Interactive Marbles:	This online manipulative allows the student to simulate placing marbles into a bag and finding the probability of pulling out certain combinations of marbles. This allows exploration of probabilities of multiple events as well as probability with and without replacement. The tabs above the applet provide access to supplemental materials, including background information about the topics covered, a description of how to use the application, and exploration questions for use with the Java applet.
Rain and Lightning:	This problem solving task challenges students to determine if two weather events are independent, and use that conclusion to find the probability of having similar weather events under certain conditions.
Return to Fred's Fun Factory (with 50 cents):	The task is intended to address sample space, independence, probability distributions and permutations/combinations.
Spinner:	In this activity, students adjust how many sections there are on a fair spinner then run simulated trials on that spinner as a way to develop concepts of probability. A table next to the spinner displays the theoretical probability for each color section of the spinner and records the experimental probability from the spinning trials. This activity allows students to explore the topics of experimental and theoretical probability by seeing them displayed side by side for the spinner they have created. This activity includes supplemental materials, including background information about the topics covered, a description of how to use the application, and exploration questions for use with the java applet.
The Titanic 2:	This task lets students explore the concepts of probability as a fraction of outcomes and using two-way tables of data.

Parent Resources

Name	Description
Cards and Independence:	This problem solving task lets students explore the concept of independence of events.
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Return to Fred's Fun Factory (with 50 cents):	The task is intended to address sample space, independence, probability distributions and permutations/combinations.
The Titanic 2:	This task lets students explore the concepts of probability as a fraction of outcomes and using two-way tables of data.